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Mohan et al.

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(54) **PENDANT HOUSING FOR A CAMERA**

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B23P 19/04 (2006.01)
G03B 17/08 (2006.01)
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See application file for complete search history.

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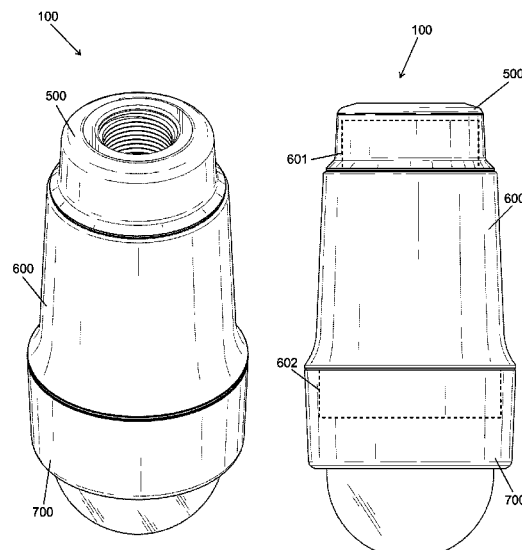
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(57) **ABSTRACT**

A pendant housing for a camera. The housing comprises a substantially cylindrical casing. The substantially cylindrical casing further includes a top end portion that may be removeably mounted to a tube without a tool, a dome structure that may house at least a lens portion of a camera, a bottom end portion that may be removeably mounted to the dome structure without a tool, and a waterproof seal positioned between the bottom end portion and the dome structure.

20 Claims, 17 Drawing Sheets



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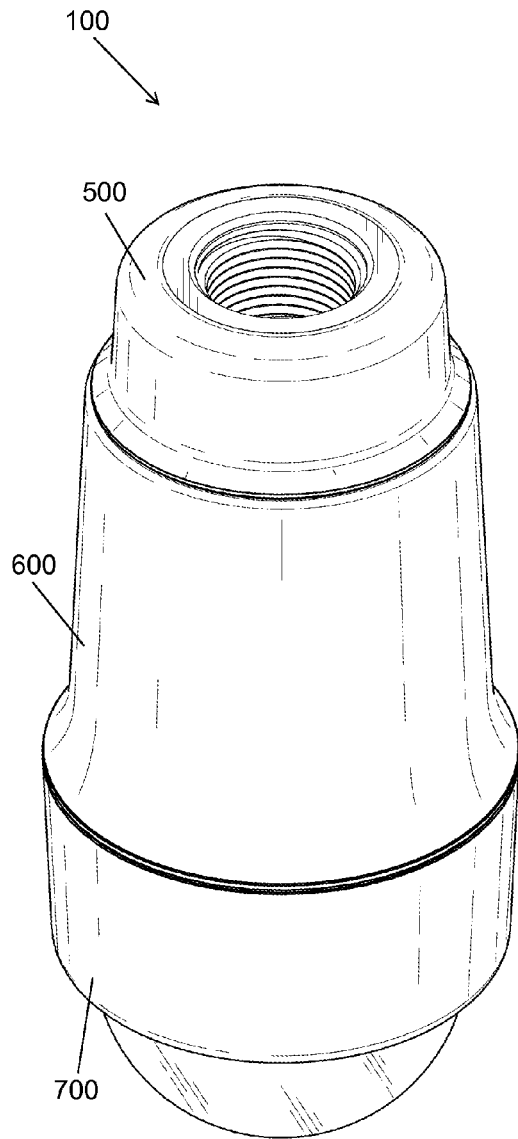


FIG. 1

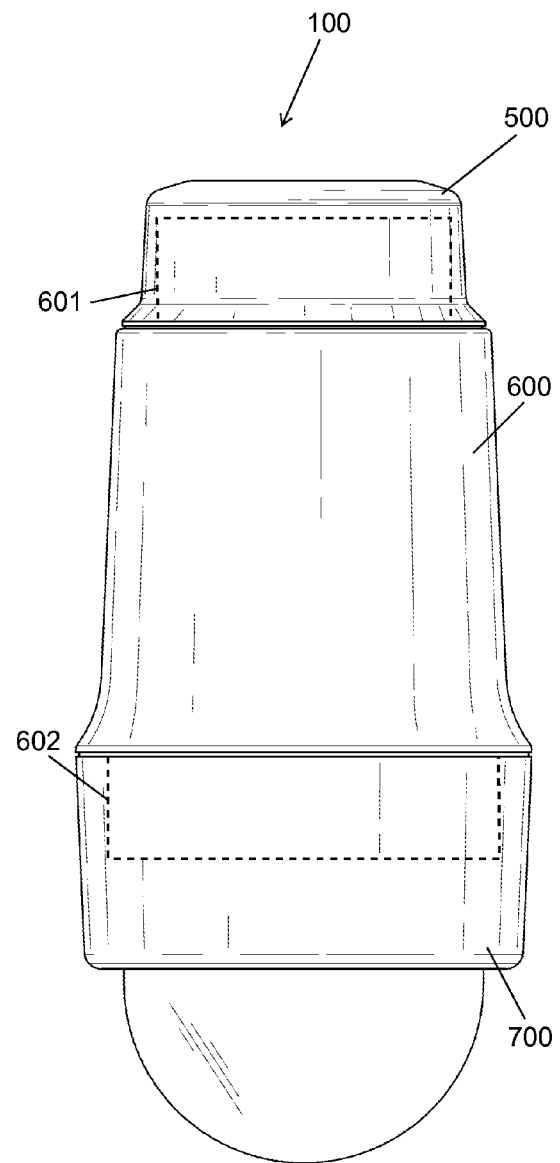


FIG. 2

100

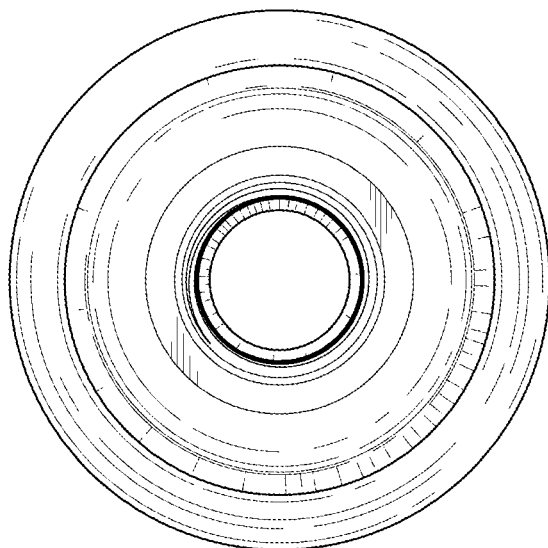
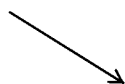
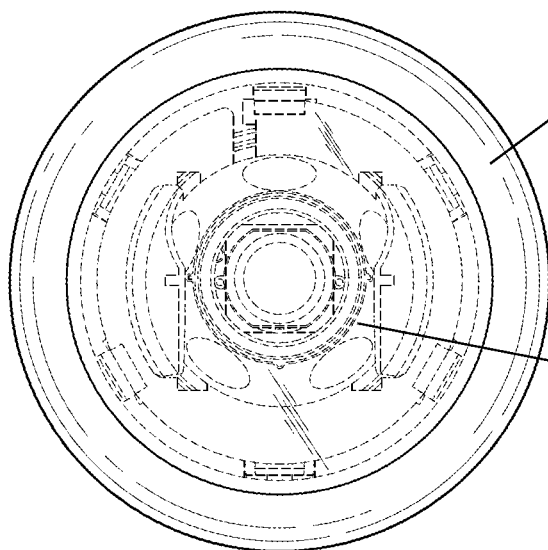


FIG. 3



700

1000

FIG. 4

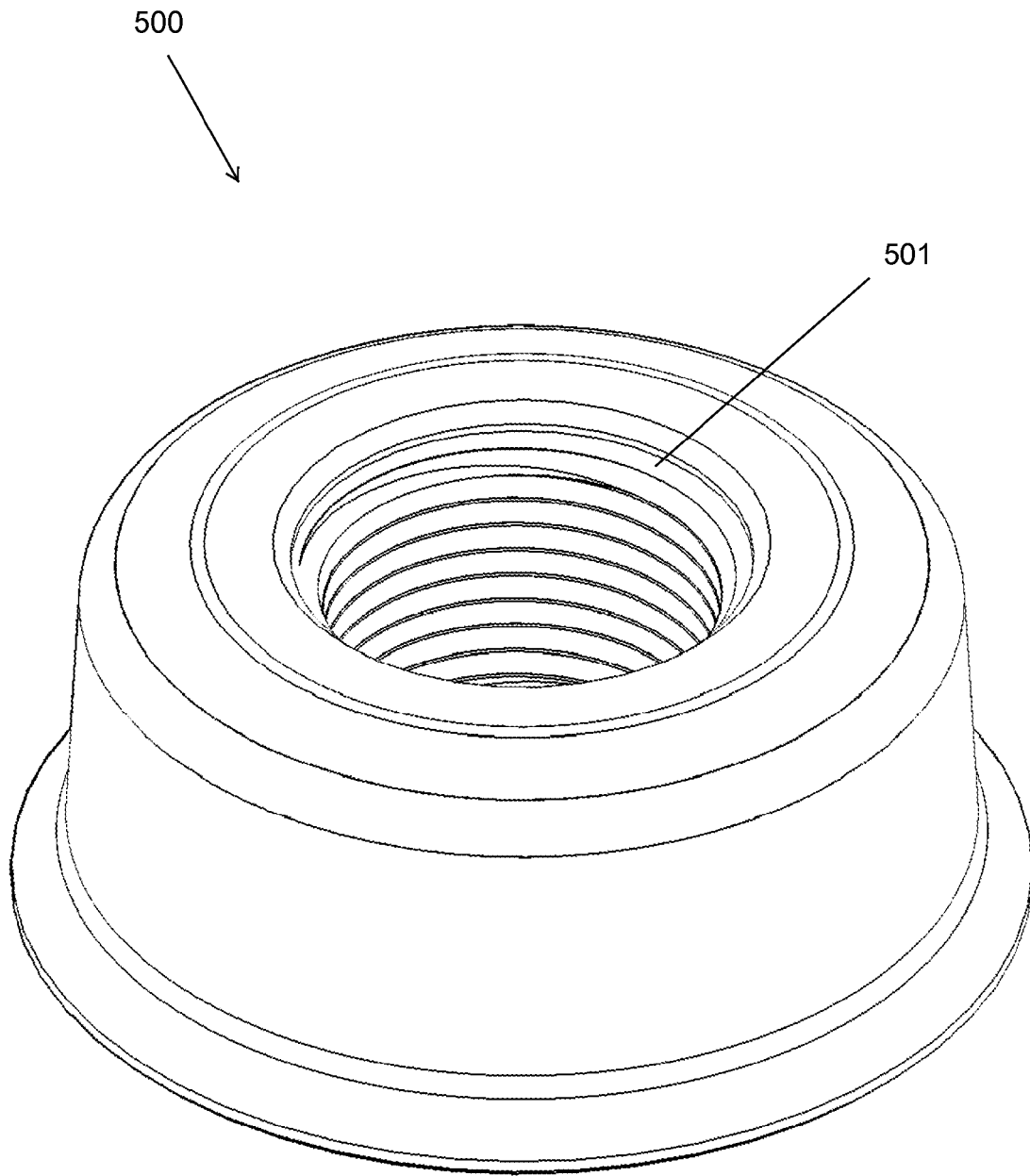


FIG. 5A

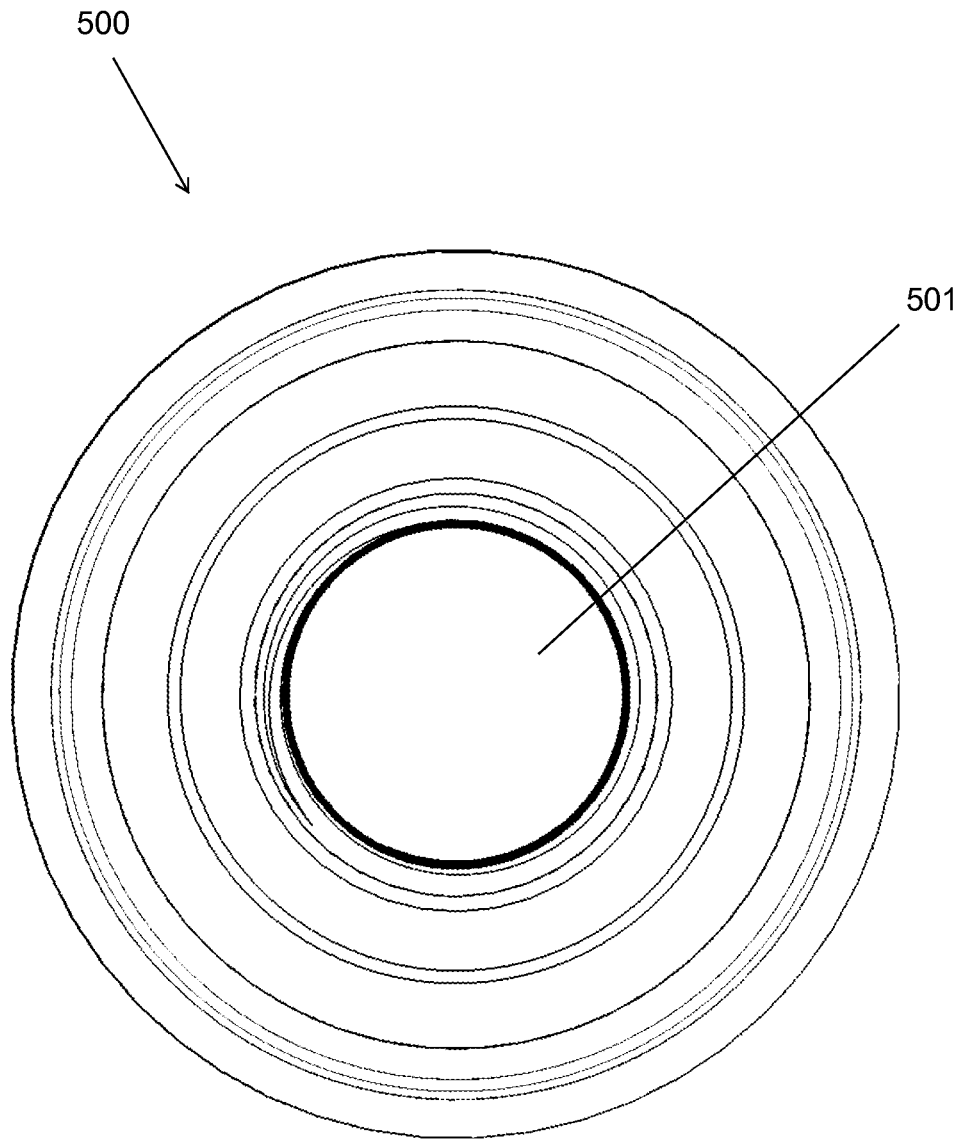


FIG. 5B

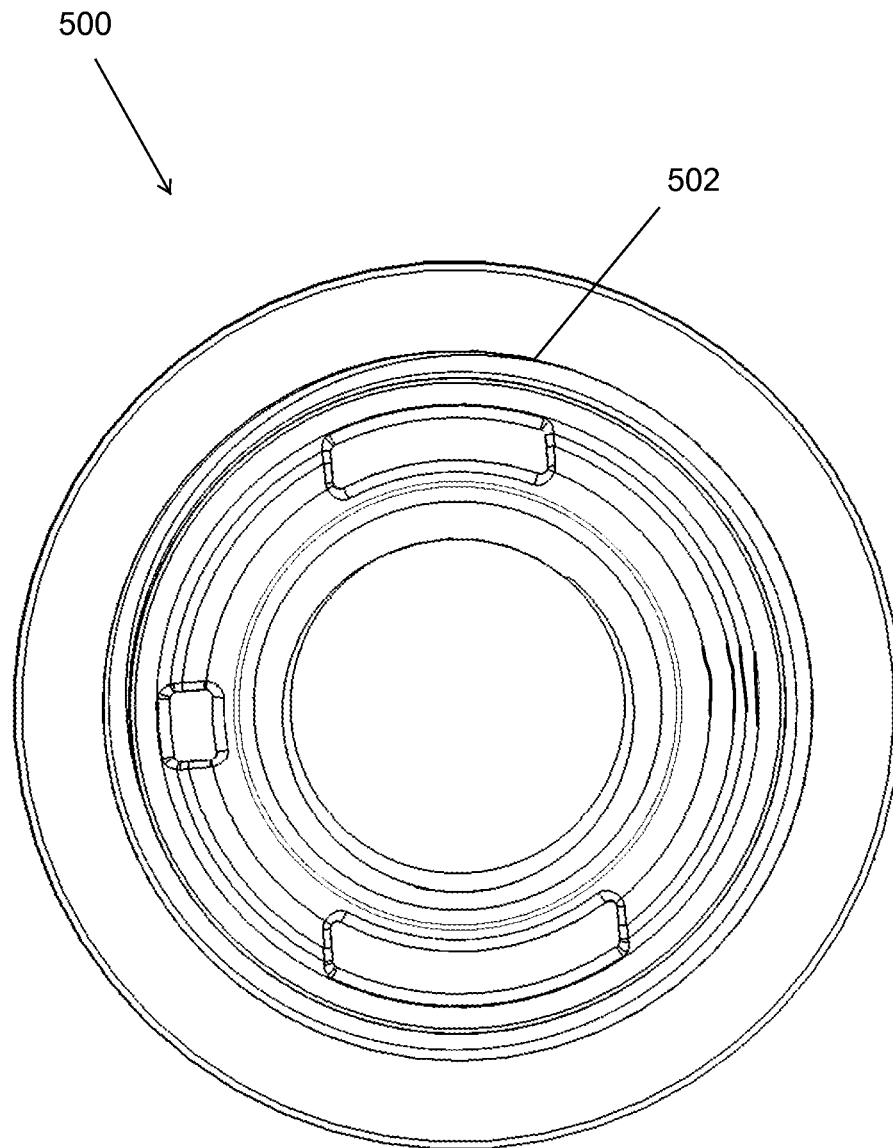


FIG. 5C

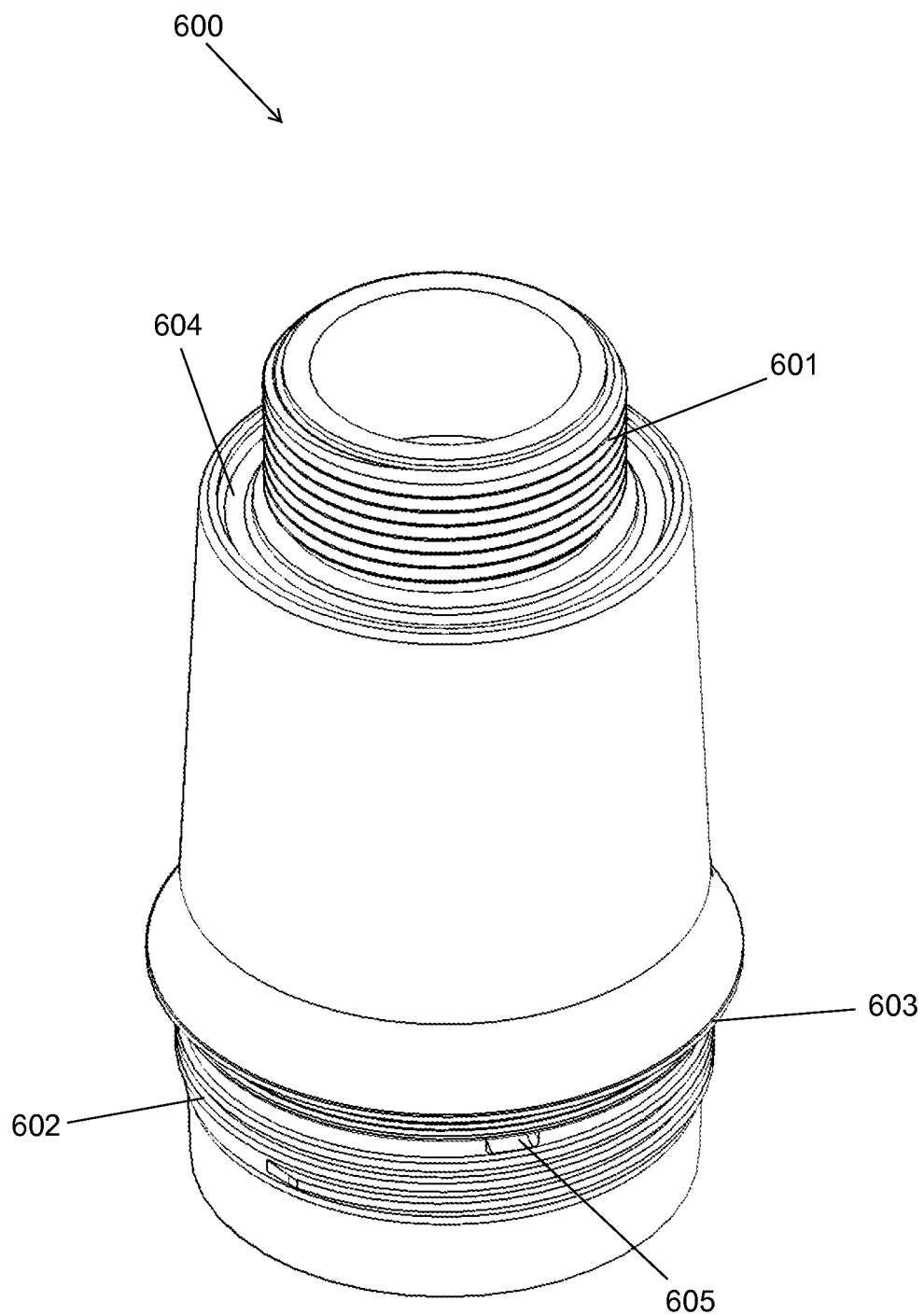


FIG. 6A

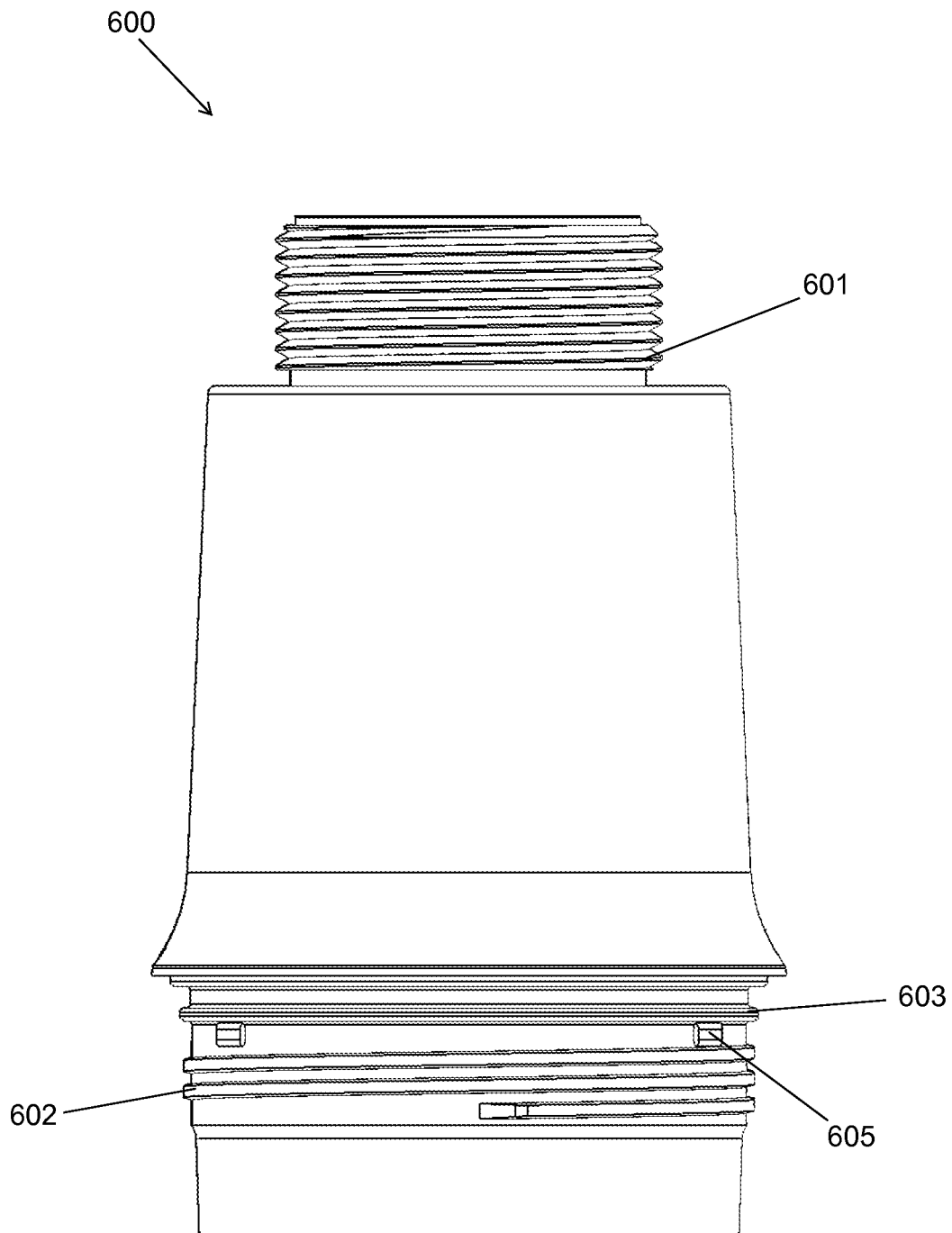


FIG. 6B

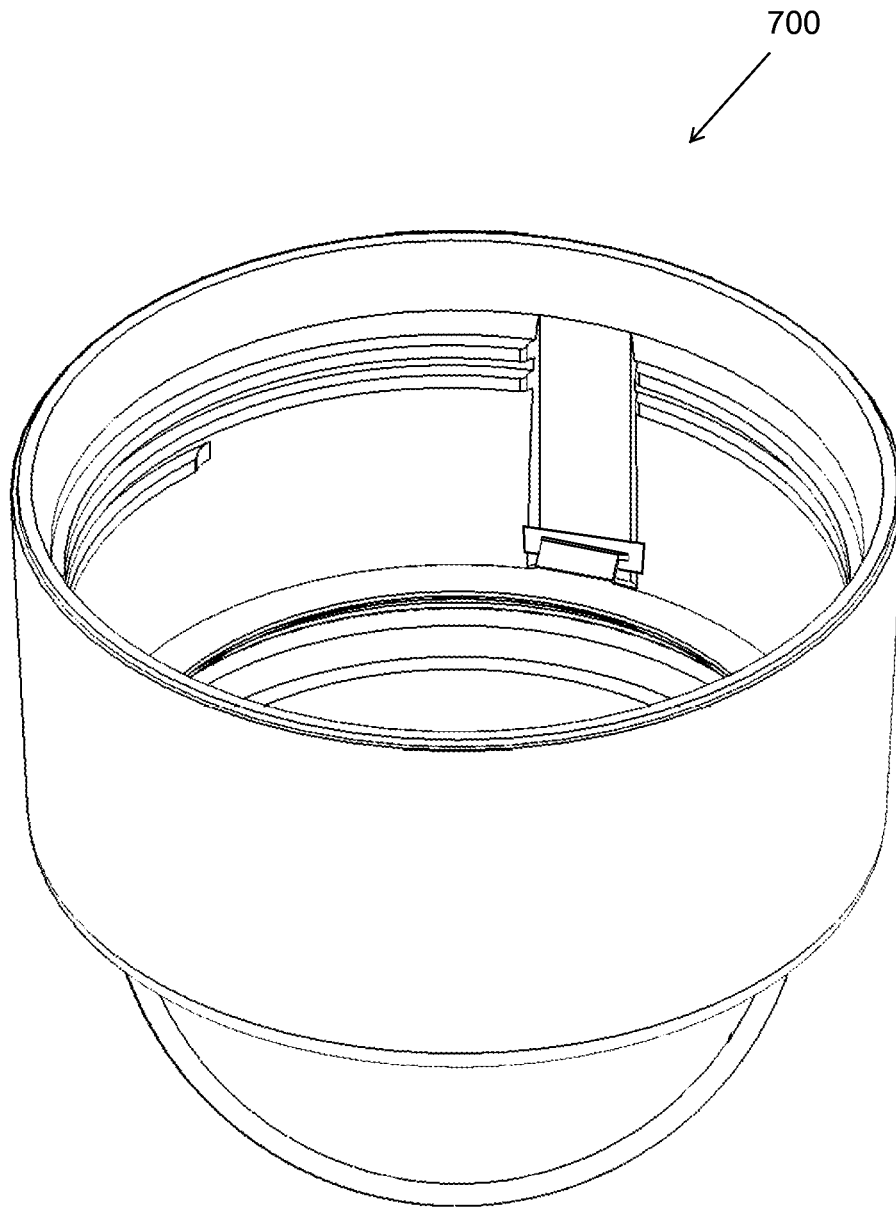


FIG. 7A

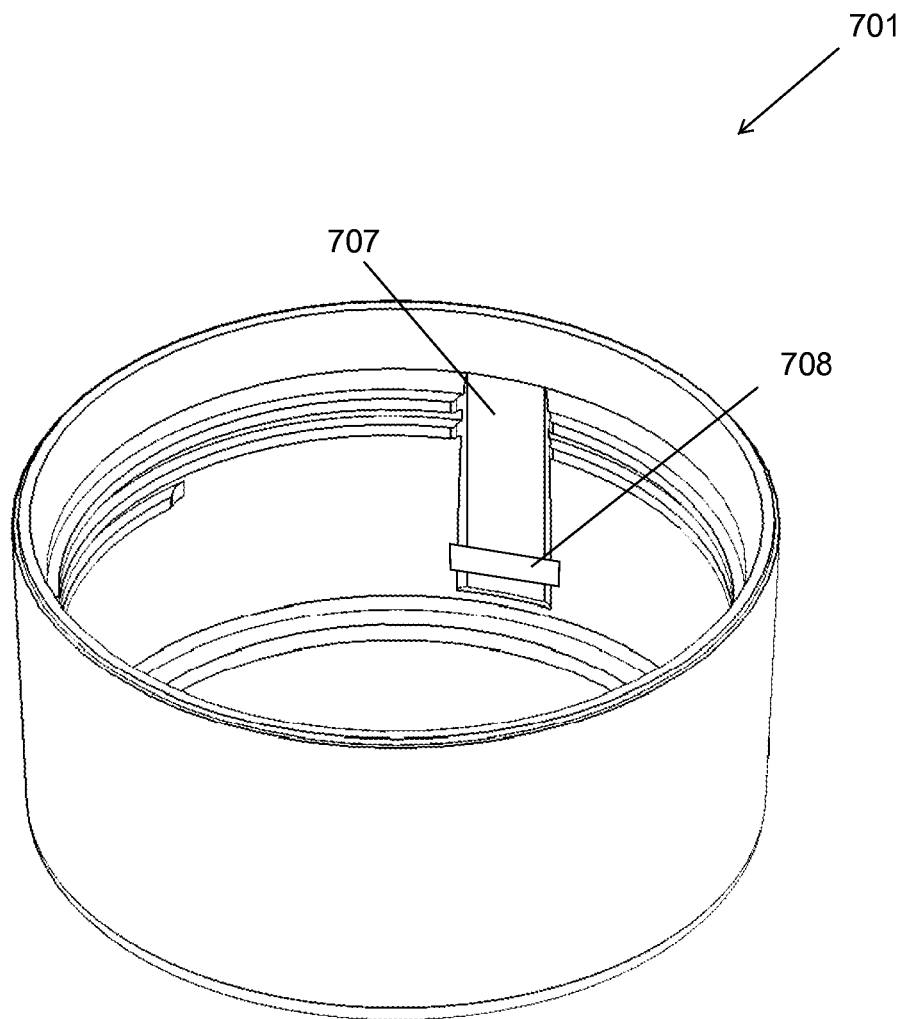


FIG. 7B

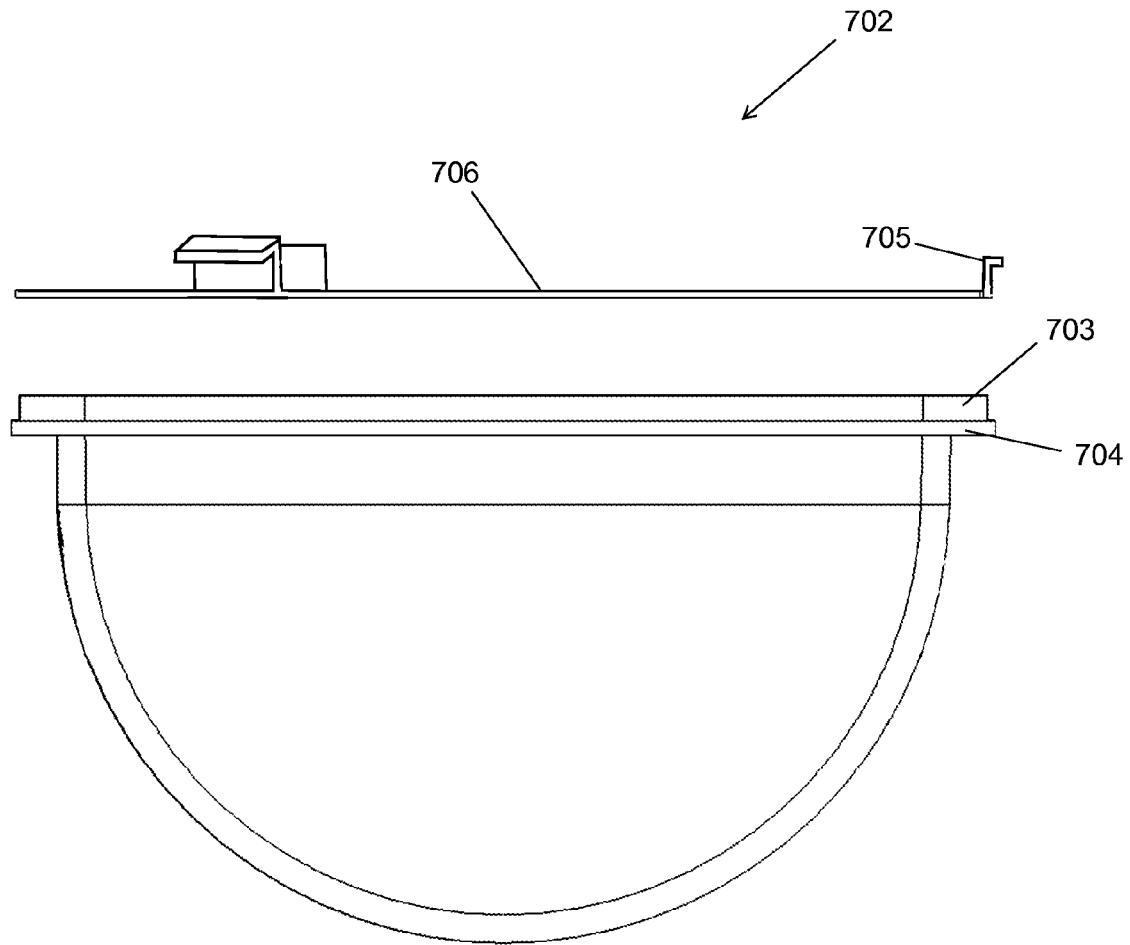


FIG. 7C

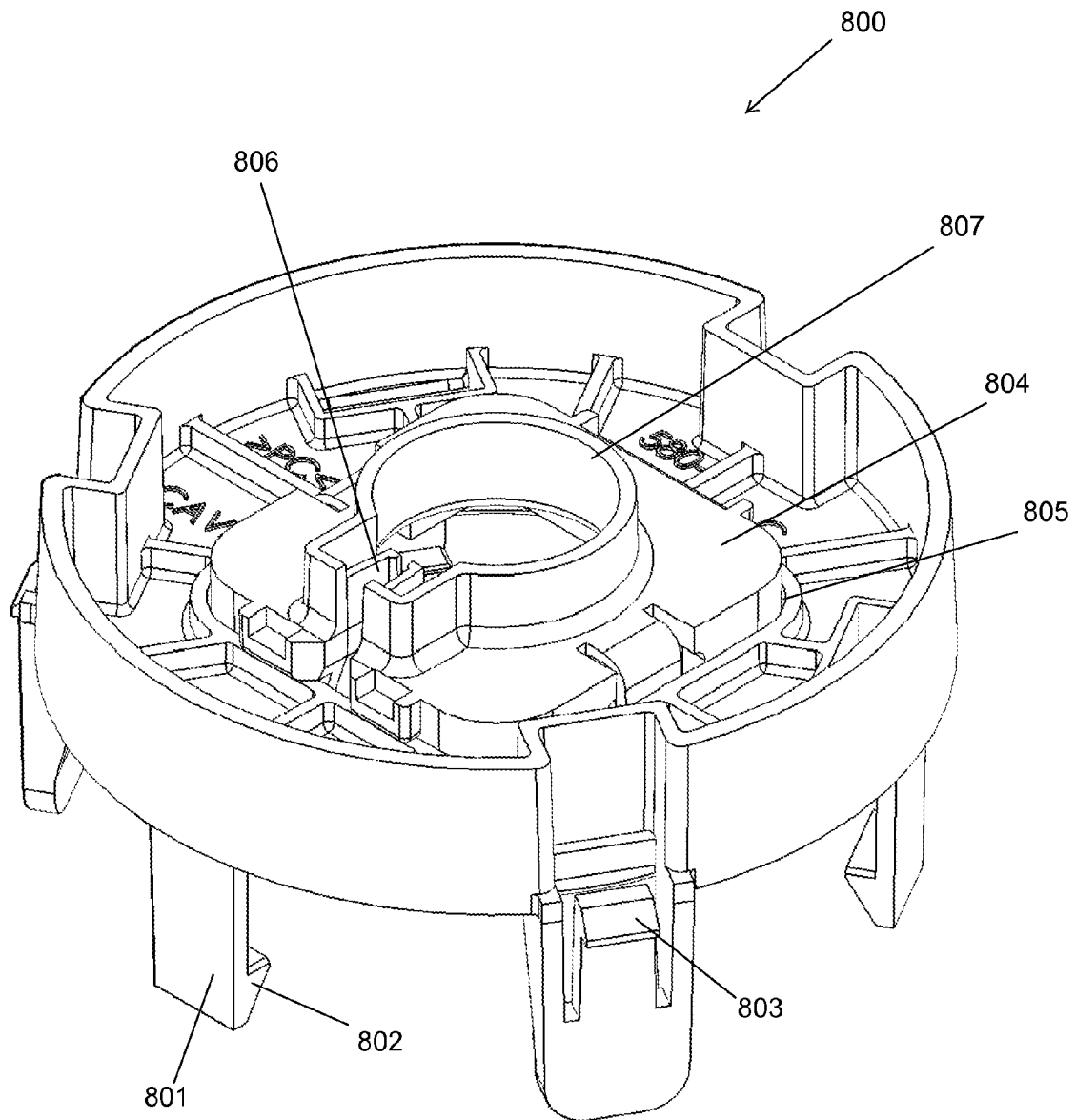


FIG. 8

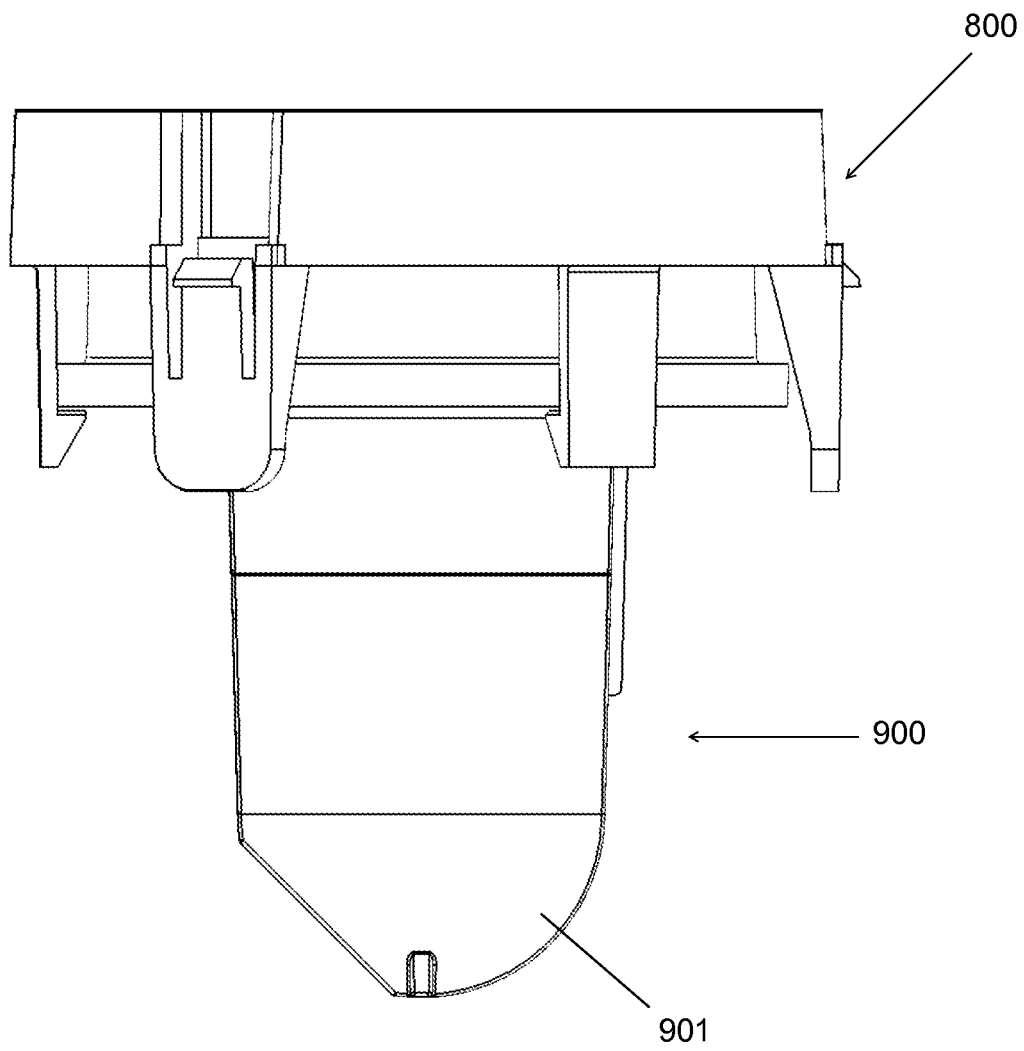


FIG. 9A

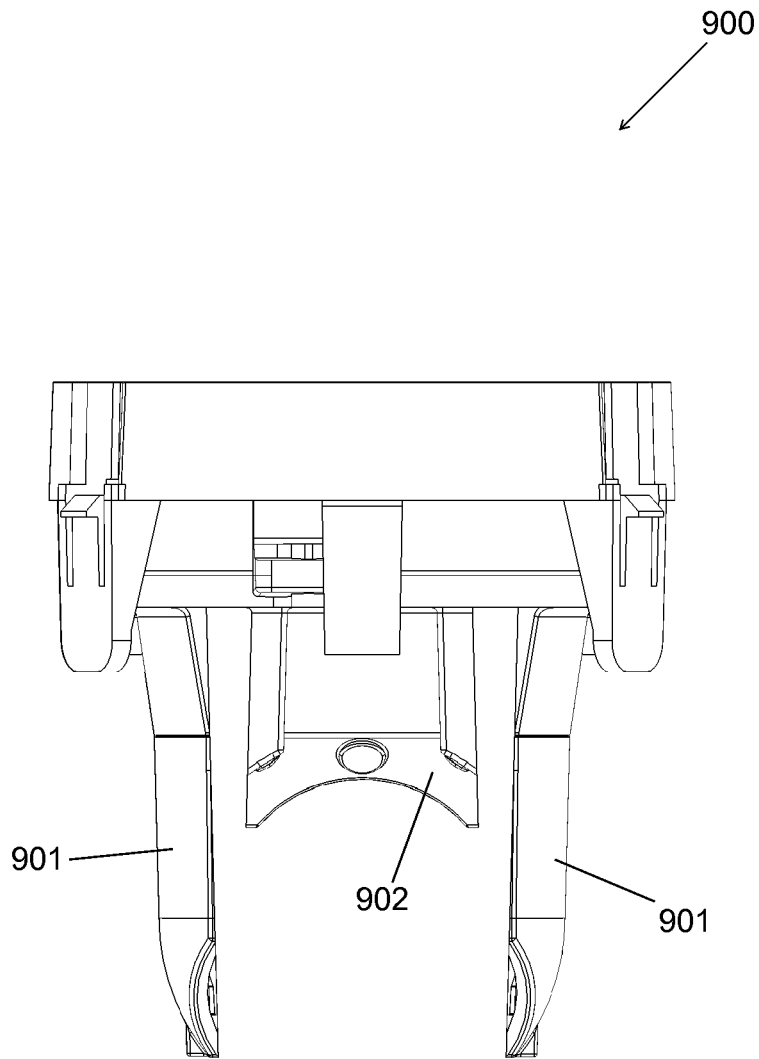


FIG. 9B

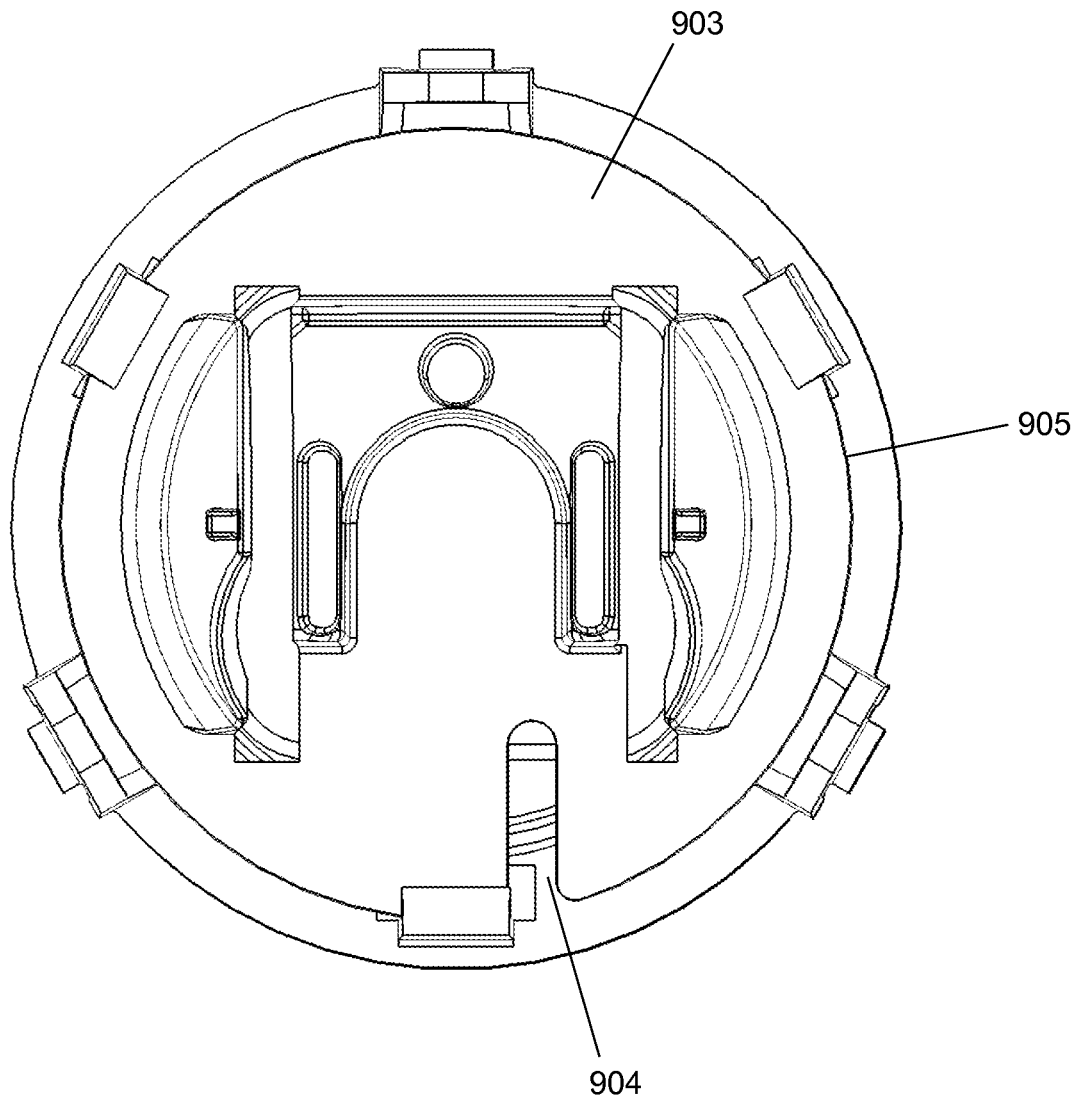


FIG. 9C

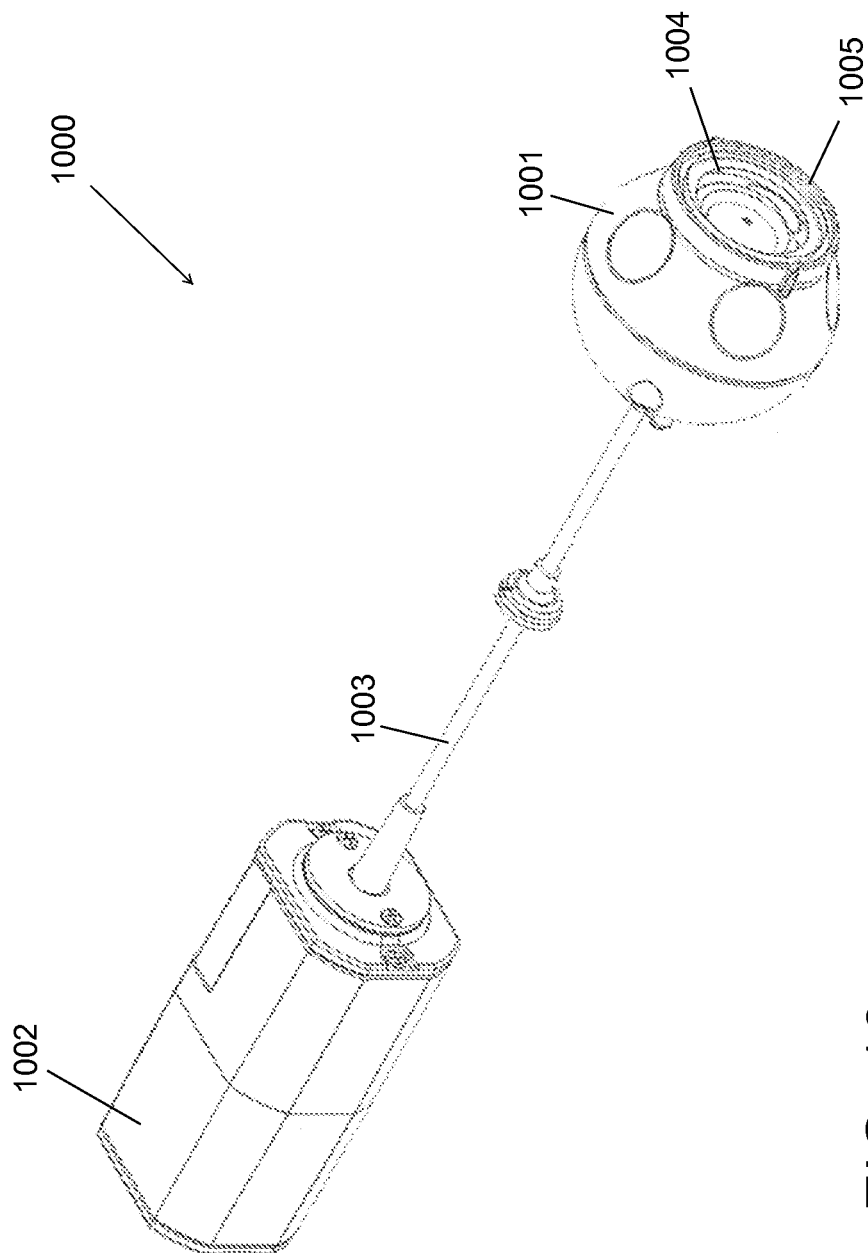


FIG. 10

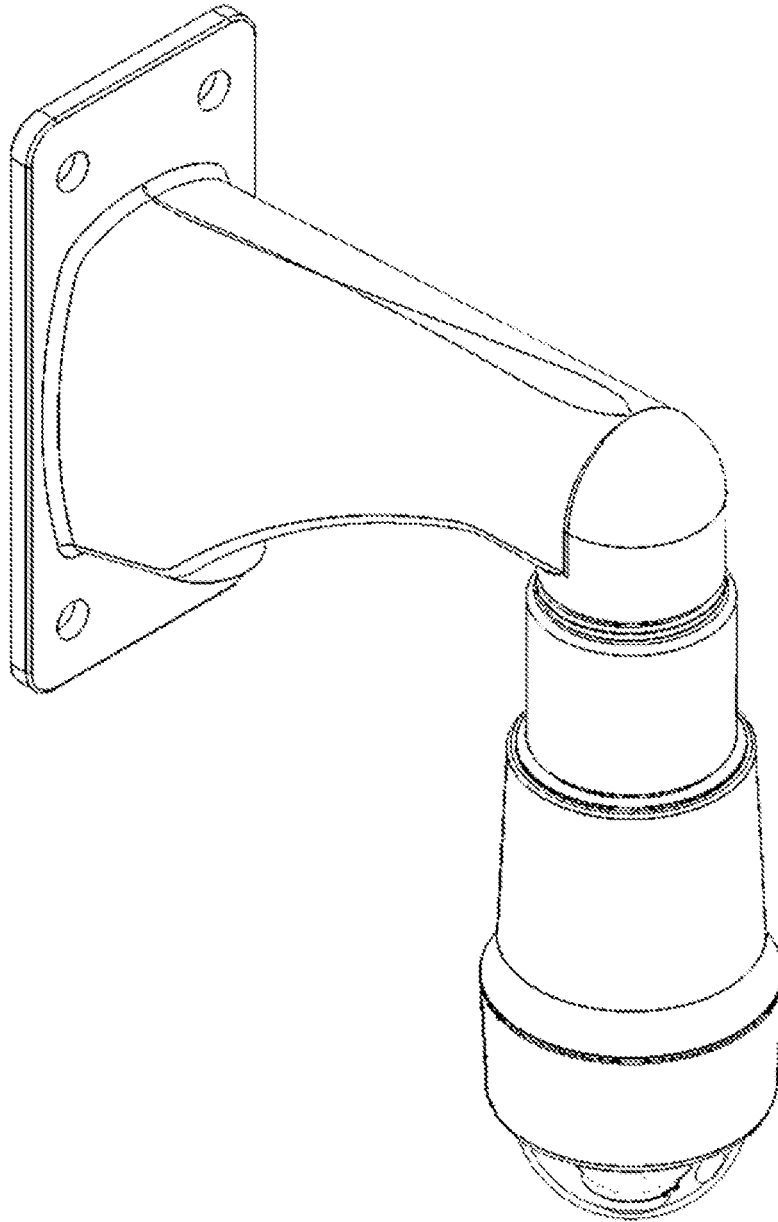


FIG. 11A

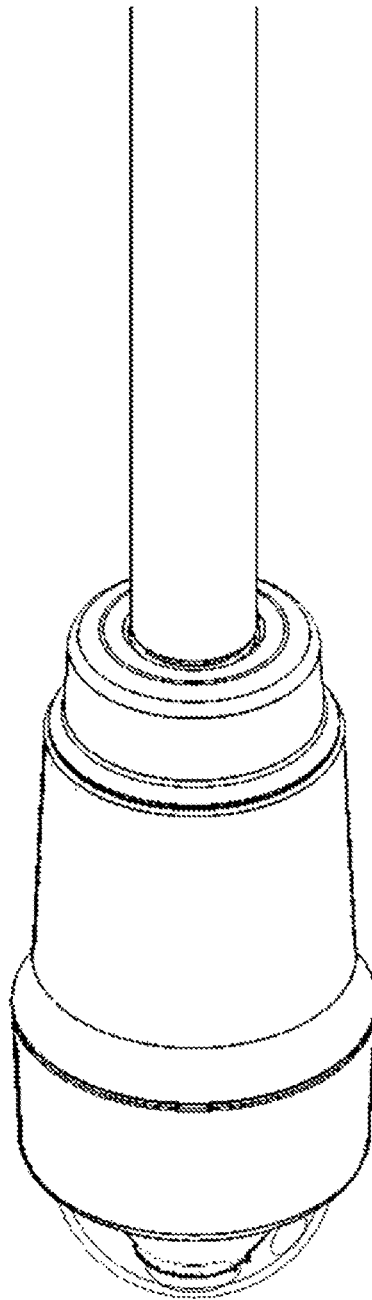


FIG. 11B

1

PENDANT HOUSING FOR A CAMERA**CROSS REFERENCE TO RELATED APPLICATIONS**

This application is a continuation-in-part of U.S. Design patent application Ser. No. 29/500,843 filed on Aug. 28, 2014, entitled "PENDANT ENCLOSURE FOR SPHERICAL CAMERA."

TECHNICAL FIELD

The present disclosure is directed at a pendant housing for a camera such as a security camera.

BACKGROUND

There is an increasing demand for video surveillance equipment globally to address actual and perceived needs for surveillance of buildings, warehouses, garages and other public and private spaces in order to prevent and respond to violent crime, property crime, and terrorism. In particular, a significant amount of activity in the global surveillance market relates to replacing analog security cameras with newer and more flexible digital surveillance cameras and to adding cameras in physical spaces where it was difficult to place cameras in the past. Given this, there exists a continued need for solutions that can expedite and ease installation of video surveillance equipment generally and security cameras in particular.

SUMMARY

According to a first aspect, there is provided a pendant housing for a camera. The housing comprises a substantially cylindrical casing. The substantially cylindrical casing further includes a top end portion that may be removeably mounted to a tube or rod without a tool, a dome structure that may house at least a lens portion of a camera, a bottom end portion that may be removeably mounted to the dome structure without a tool, and a waterproof seal positioned between the bottom end portion and the dome structure.

The substantially cylindrical casing may be mounted to any type of cylindrical base, such as a threaded tube, a threaded pipe, or a threaded metal rod.

The top end portion of the substantially cylindrical casing may be extended upward and threaded. The bottom end portion of the substantially cylindrical casing may be extended downward and threaded. The dome structure may also be threaded.

The housing may further comprise an adapter removeably mounted to the top end portion. The adapter may be threaded. The housing may also further comprise a waterproof ring positioned between the top end portion of the substantially cylindrical casing and the adapter after the top end portion is mounted.

The dome structure of the housing may further comprise a cylindrical dome housing, a substantially clear dome, a compressible seal that may be positioned between the cylindrical dome housing and the substantially clear dome, and a dome ring that may be affixed to the substantially clear dome and the cylindrical dome housing without a tool. The substantially clear dome and the cylindrical dome housing may be detachable to one another.

The dome ring may also further comprise at least one spring. The at least one spring may maintain the affixation between the substantially clear dome and the cylindrical

2

dome housing. The at least one spring may further have the capability to absorb external pressure when pressed against the substantially clear dome.

The bottom end portion of the substantially cylindrical casing may further include an interior side wall that forms at least one hole. The at least one hole of the interior side wall may be configured to couple with a detachable sliding member. The detachable sliding member may be configured to hold the camera.

The detachable sliding member may be further capable of sliding along the interior side wall of the bottom end portion. The detachable sliding member may also further be attached to a gimbal.

The detachable sliding member may further include at least one latch that extends from an underside of the detachable sliding member. Each of the one or more latches may further have a lever arm at an end of which is a hook. The latches may be configured to hook over and secure the gimbal.

The gimbal may further include a security camera head. The gimbal may include at least two arms positioned frictionally to hold the security camera in place. The arms may extend linearly and positioned to contact the security camera head. Further, the gimbal may include a seat positioned to receive a surface of the security camera head. The seat may be curved.

The security camera head may further include at least one lens, at least one image sensor, an image processing module, and a cable. The security camera head may be spherical in shape.

The gimbal may further comprise a top surface from which the arms and the seat extend. The top surface of the gimbal comprising a slot for receiving a cable that connects the security camera head to image processing circuitry.

The gimbal may further comprise a lip extending from the top surface on a side opposite from which the arms and the seat extend. The lip may be spaced from the periphery of the top surface to delineate a flange between the lip and the periphery of the top surface.

According to another aspect, there is provided a method for housing a camera. The method comprises, mounting a substantially cylindrical casing with a top end portion to a tube without a tool, mounting a dome structure with at least one lens portion of a camera to a bottom end portion of the substantially cylindrical casing without a tool, and positioning a waterproof seal between the bottom end portion and the dome structure.

The substantially cylindrical casing may be mounted to a threaded tube, a threaded pipe, or a threaded metal rod.

The top end portion of the substantially cylindrical casing may be extended upward and threaded. The bottom end portion of the substantially cylindrical casing may be extended downward and threaded. The dome structure may be threaded.

The housing may further comprise an adapter removeably mounted to the top end portion. The adapter may be threaded. The housing may also further comprise a waterproof ring positioned between the top end portion of the substantially cylindrical casing and the adapter after the top end portion is mounted.

The dome structure of the housing may further comprise a cylindrical dome housing, a substantially clear dome, a compressible seal that may be positioned between the cylindrical dome housing and the substantially clear dome, and a dome ring that may be affixed to the substantially clear dome and the cylindrical dome housing without a tool. The substantially clear dome and the cylindrical dome housing may be detachable to one another.

3

The dome ring may also further comprise at least one retaining ring. The at least one retaining ring may maintain the affixation between the substantially clear dome and the cylindrical dome housing. The at least one spring may further have the capability to absorb external pressure when pressed against the substantially clear dome.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings, which illustrate one or more example embodiments:

FIG. 1 is a perspective view of a pendant housing for a camera, according to one embodiment.

FIG. 2 shows a perspective side view of the housing for a camera of FIG. 1, according to one embodiment.

FIGS. 3 and 4 show a top plan and a bottom plan view, respectively, of the housing of FIGS. 1 and 2.

FIGS. 5A, 5B and 5C show perspective, top plan, and bottom plan views, respectively, of an adapter that comprises part of the housing in FIGS. 1 and 2.

FIGS. 6A and 6B show perspective and front views of the housing without the adapter and dome structure attached.

FIG. 7A shows a perspective view of a dome structure comprising a cylindrical dome housing and a substantially clear dome. FIGS. 7B and 7C show perspective views, respectively, of a cylindrical dome housing and a substantially clear dome.

FIG. 8 shows a perspective view of a detachable sliding member.

FIGS. 9A and 9B show side views, separated by 90 degrees, respectively, of a gimbal attached to the detachable sliding member.

FIG. 9C shows a bottom plan view of the gimbal of FIGS. 9A and 9B.

FIG. 10 shows a perspective view of a security camera comprising a cable and an image processing circuitry.

FIGS. 11A and 11B show perspective views of embodiments for mounting the pendant housing for a camera to a wall and to a pipe extending from a ceiling.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

Directional terms such as “top,” “bottom,” “upwards,” “downwards,” “vertically,” and “laterally,” are used in the following description for the purpose of providing relative reference only, and are not intended to suggest any limitations on how any article is to be positioned during use, or to be mounted in an assembly or relative to an environment. Additionally, the term “substantially” as used in this description is intended to describe a particular characteristic of a claimed element. Further, the term “couple” and variants of it such as “coupled”, “couples”, and “coupling” as used in this description are intended to include indirect and direct connections unless otherwise indicated. For example, if a first device is coupled to a second device, that coupling may be through a direct connection or through an indirect connection via other devices and connections. Similarly, if the first device is communicatively coupled to the second device, communication may be through a direct connection or through an indirect connection via other devices and connections.

A mounting housing refers to a housing that can be used to mount a device to a surface, such as a wall or ceiling. For example, a mounting housing may be combined with a camera to make an in-ceiling mount camera, which is a camera that is designed to be mounted to and partially recessed behind a ceiling. A suitable ceiling is one in which a hollow

4

cavity is behind the ceiling and is sufficiently large to accept back ends of the camera and the mounting housing, which are hidden from view when the camera is mounted, and any associated wiring; suitable ceilings may comprise, for example, drywall screwed on to joists and a suspended or “dropped” ceiling. In the case of a dome camera for example, the bulk of the camera is recessed behind the ceiling and only the hemispherical dome is visible below the ceiling. The portion of the camera that is above the bottom surface of the ceiling when the camera is mounted is the “back end” of the camera, while the volume of space above the bottom surface of the ceiling is the “ceiling space”. A hole is cut in the ceiling that is slightly larger than required to allow the back end of the camera to be inserted through it. The camera is equipped with a mechanism to grip the ceiling and hold the camera securely in place.

Generally, these gripping mechanisms are difficult to operate because they are hidden from an installer’s view behind the ceiling. They typically use a leadscrew-driven clamp that the installer screws to clamp the camera to the ceiling in order to accommodate a wide range of ceiling thicknesses. Consequently, for thin ceilings the installer may have to awkwardly screw the clamp for a long period of time. This is cumbersome and time consuming for the installer, particularly since the installer is usually standing on a ladder while using one hand to support the camera while screwing the leadscrew. In addition, factories or building space with high ceilings create a difficult task not only for the installation process of a dome camera but also for users who want to capture images on the ground with more precision. In a large warehouse type of building with 15 foot or higher ceilings, mounting a camera on the ceiling will only generate images of the tops of people’s bodies or the tops of objects on the ground, which may make accurate surveillance difficult.

In contrast, the depicted embodiments are directed at a pendant housing for a camera such as a security camera that may be mounted to a tube, such as a pipe, suspending down from a ceiling, such as shown in FIG. 11B, and a method for housing and mounting the camera to the tube. The pendant housing may also be mounted to a pendant arm and may in turn be mounted to a wall or other vertical surface, such as shown in FIG. 11A. The camera housing may comprise a substantially cylindrical casing including a top end portion that may be mountable to a tube, without a tool, through an adapter. A tube is merely one embodiment that the casing may mount to and the present disclosure is not limited to just tubes or similarly cylindrically shaped objects. A pipe, an elongated cylindrical plastic tube, a polyvinyl chloride (PVC) pipe, a pendant arm, or a metal rod are some examples of alternative embodiments in which the casing may mount to, although hollow tubes have the advantage of retaining wiring for the camera that might be exposed by a rod mount. The casing has a bottom end portion capable of being mounted to a dome structure without a tool. The bottom end portion of the casing may include a security camera that may hook onto the interior wall of the casing without a tool. The security camera may be positioned on a sliding member and a gimbal. The sliding member may provide for the security camera to slide along the interior of the casing and to hook onto the casing.

As noted above and further described below, the entire housing and camera, the camera system, may be assembled by an installer without the need for a tool. The dome may be installed in the dome housing, with a seal between the dome and the dome housing, by placing the dome in the dome housing with the seal in place and pushing a spring into the housing to flexibly secure the dome. The camera may then be snapped into the gimbal, with wiring for the camera secured

5

from damage by other pieces that snap into place. The housing itself may be screwed onto the threaded tube lowered from the ceiling, and the dome housing may then be screwed onto the other end of the housing. In this manner, the installer is not required to carry a tool belt while climbing a ladder or to maintain their balance on the ladder while attempting to use various tools to accomplish an installation of the camera system. This reduces the amount of time required to install the camera, reduces the potential for injury and generally lowers the cost of replacing or installing cameras. As discussed in greater detail below, and in the example embodiment in which the casing is mounted to a tube suspended down from the ceiling, the casing may also be mounted in other ways.

As also noted, a waterproof seal may be conveniently positioned between the bottom end portion and the dome structure to provide protection from water damage to the camera and a seal may be placed between the housing and any adapter used to install the housing onto difference sized tubes or pipes. The combination of seals between the adapter and housing, and housing and the dome structure and the dome and the dome housing are unique for a camera used in interior applications. Normally, only exterior cameras are sealed to prevent rain, snow and other humidity from entering the camera housing and fogging up the inside of the dome or damaging the camera. Even when cameras are installed inside buildings with sprinkler-based fire protection systems, the cameras are mounted in the ceilings above the sprinklers, so are in no danger of getting wet in the event the sprinklers are activated. However, when the sprinklers are mounted above the cameras, such as when the camera is mounted to pipe dropped from the ceiling, the camera is completely exposed to water in the event the sprinklers are activated, which thereby necessitates the seals described herein.

The embodiments depicted in the drawings are discussed below. These embodiments are primarily directed to an embodiment that includes mounting the housing to a tube. However, as discussed above, in alternative embodiments (not depicted) the mounting products may be another product, such as a metal rod or differently shaped structure.

Referring now to FIGS. 1 and 2, there are respectively shown a perspective and a side view of a housing 100 in isolation. The housing 100 generally comprises a substantially cylindrical casing 600. The substantially cylindrical casing 600 including a top end portion 601 (shown as dashed lines) that may be removeably mounted to a tube (not pictured) through an adapter 500 (shown in more detail in FIG. 5). The adapter 500 may be threaded and may vary in height. The substantially cylindrical casing 600 including a bottom end portion 602 (shown as dashed lines) that may be removeably mounted to a dome structure 700 (shown in more detail in FIGS. 7A, 7B and 7C). The above mountings mentioned may all be accomplished without a tool. The diameter of the exposed portion of the cylindrical casing 600 may generally increase from near the top end portion 601 to near the bottom end portion 602, which serves to provide a wider flange near the bottom end portion 602 and enables a seal to be mounted between near the bottom end portion 602 and the dome structure 700, as further described below.

Referring now to FIGS. 3 and 4, there are respectively shown top plan and bottom plan views of housing 100 in isolation. In FIG. 3, the top plan view of housing 100 may be comprised of the adapter 500 forming an opening. The opening of adapter 500 may be mounted to a tube (not pictured). The tube may be threaded. In FIG. 4, the bottom plan view of housing 100 may be comprised of the dome structure 700

6

(shown in more detail in FIG. 7). The dome structure 700 may be comprised to hold a security camera 1000 (shown in more detail in FIG. 10).

Referring now to FIGS. 5A, 5B and 5C, there are respectively shown perspective, top plan, and bottom plan views of the adapter 500. In FIG. 5A, the adapter 500 may include a first interior side wall 501, that may be threaded, and that forms the opening for mounting to the tube. A second interior wall 502 of the adapter 500 may be threaded for coupling and removeably mounting to the threaded top end portion 601 of the casing 600 (shown in more detail in FIG. 6) without a tool. The adapter 500 and the top end portion 601 of the casing 600 may be threaded together simply by twisting and turning the adapter 500 in a certain direction onto the top end portion 601 of the casing 600.

Referring now to FIGS. 6A and 6B, there are shown perspective and front views of the substantially cylindrical casing 600 in isolation without the adapter and dome structure. The substantially cylindrical casing 600 may generally be comprised of a top end portion 601 and a bottom end portion 602. The top end portion 601, extending upwardly, may be removeably mounted directly to a tube (not pictured) or indirectly through an adapter 500 (shown in more detail in FIGS. 5A, 5B and 5C) without a tool. The top end portion 601 generally may be threaded. The bottom end portion 602, extending downwardly, may be removeably mounted to a dome structure 700 (shown in more detail in FIGS. 7A, 7B and 7C) without a tool. The bottom end portion 602 generally may be threaded. The walls of the bottom end portion 602 may form at least one hole 605. The at least one hole 605 may be configured to accept an outer hook 803 from a detachable sliding member 800 (shown in more detail in FIG. 8). The bottom end portion 602 may also be comprised of a waterproof seal 603, made of foam or other suitable materials. The waterproof seal 603 generally may be circular in shape and positioned around the bottom end portion 602. The waterproof seal 603 may also be detachable from the bottom end portion 602. A waterproof foam ring 604, which may also be made of other materials, may be positioned between the top end portion 601 and the adapter 500 when coupled together. The waterproof foam ring 604 may generally be circular in shape.

Referring now to FIGS. 7A, 7B and 7C, there are respectively shown perspective views of a dome structure 700, a cylindrical dome housing 701, and a substantially clear dome 702 in isolation. In FIG. 7A, there is shown the perspective view of the dome structure 700 that may be comprised of the cylindrical dome housing 701 and the substantially clear dome 702 affixed together. The dome structure 700 and the bottom end portion 602 of the casing 600 (shown in FIG. 6) may be threaded together without a tool. The dome structure 700 and the bottom end portion 602 of the casing 600 may be threaded together simply by twisting and turning the dome structure 700 in a certain direction onto the bottom end portion 602 of the casing 600. In FIG. 7B, there is shown a perspective view of the cylindrical dome housing 701 in isolation. The inside walls of the cylindrical dome housing 701 may be threaded and include one or more spring slots 707 with detents 708 formed at the bottom of each spring slot 707, as further described below, formed in the inside walls where there is no threading. In FIG. 7C, there is shown a perspective view of the substantially clear dome 702 in isolation.

The substantially clear dome 702 may further generally be comprised of a dome ring 703, a compressible seal 704, and at least one spring 705. The compressible seal 704 may be positioned between the retaining ring 706 and the substantially clear dome 702 when affixed together. The retaining

7

ring **706** may be positioned over the seal **704**, which is positioned over the dome ring **703**. The one or more springs **705** are arranged around the outside of the retaining ring **706** and stick up and away from the retaining ring **706**. The combination of the dome **702**, dome ring **703**, seal **704**, springs **705** and retaining ring **706** may then be inserted into the dome housing **701** by matching the springs **705** up with the spring slots **707** and pushing the retaining ring **706** down until the springs lock in place within detents **708** formed at the bottom of each spring slot **707**. The combination of the detents, which are large enough to allow the spring to move up and down, and the at least one spring **705** may function as a shock absorber when the substantially clear dome **702** experiences outside pressure. For example, the entire dome structure **700** may be dropped vertically from a distance above the ground and the substantially clear dome **702** may experience pressure when dropped on the floor such that the at least one spring **705** while in the clipped position between the cylindrical dome housing **701** and the substantially clear dome **702** may absorb the pressure by moving within the detent. The at least one spring **705** may also help prevent the cylindrical dome housing **701** and the substantially clear dome **702** from detaching from one another.

Referring to FIG. **8**, there is shown a perspective view of a detachable sliding member **800**. The detachable sliding member may be capable of sliding along an interior wall of the bottom end portion **602** (shown in FIG. **6**). The detachable sliding member **800** may be comprised of latches **801**. The latches **801** may be comprised of at least one outer hook **803** extending outwardly. The at least one outer hook **803** may be capable of sliding into the hole **605** of the interior of the bottom end portion **602** (shown in FIG. **6**) such that the detachable sliding member **800** and the bottom end portion **602** may be removably coupled together. Further, the latches **801** may also be comprised to include at least one inner hook **802** extending inwardly. The at least one inner hook **802** may be capable of providing a removable connection to a gimbal **900** (shown in more detail in FIG. **9**). The detachable sliding member **800** and the gimbal **900** may be affixed together by way of the at least one inner hook **802**. The detachable sliding member **800** may further include a removable cord protector **804** that clips into an outer opening **805** formed in the middle of the detachable sliding member **800**. The outer opening **805** may be large enough to accommodate the image processing module **1002** for the camera **1000** (both shown in FIG. **10**) being inserted through detachable sliding member **800**. The cord protector **804** may further include a cord opening **806** so the cord protector may be installed around the cable **1003** (shown in FIG. **10**). The cord protector **804** may further include an inner opening **807** within which the cable **1003** may freely move, rotate and twist without getting caught or snagged by the latches **801** of the detachable sliding member **800**.

Referring to FIGS. **9A** and **9B**, there are shown side views, separated by 90 degrees, respectively, of a gimbal **900** attached to the detachable sliding member **800** of FIG. **8**. FIG. **9C** shows a bottom plan view of the gimbal of FIGS. **9A** and **9B**. The gimbal **900** may include a security camera head **1001** (shown in more detail in FIG. **10**). The gimbal **900** may also include at least two arms **901** (one of which is shown in FIG. **9A**) that are positioned to frictionally retain the security camera head **1001**. Each of the arms **901** may be configured to have a linearly positioned side located and positioned to be in contact with the security camera head **1001**. As shown in FIG. **9B**, the gimbal **900** may include a seat **902** for the camera head **1001**. The seat **902** may be curved. In FIG. **9C**, there is shown the top plan view of the gimbal **900**. The gimbal **900**

8

may include a top surface **903** including a slot **904** that may be configured to receive the cable **1003** that connects the security camera head **1001** and an image processing module **1002**. The gimbal **900** may also include a lip **905** extending from the top surface **903** and opposite from where the arms **901** are located. The lip **905** may also be further spaced and configured to create a flange between the lip **905** and a periphery of the top surface **903**.

Referring now to FIG. **10**, a perspective view of a security camera **1000** is shown. The security camera **1000** may be comprised of a security camera head **1001**, an image processing module **1002**, and a cable **1003** to connect the security camera **1001** to the image processing module **1002**. The security camera head **1001** may be comprised of at least one lens **1004** and one sensor **1005** and include a number indents around the head so it may be gripped and moved with a user's fingers. The image processing module **1002** may be comprised of an image processing circuitry and power circuitry. An example of the camera **1000** is that used in the Avigilon™ HD Micro Dome Camera products manufactured and sold by Avigilon Corporation of Vancouver, British Columbia, Canada, although in alternative embodiments (not depicted) different types of cameras, including non-miniaturized cameras, non-dome cameras, and non-spherical cameras may be placed in the housing **100**.

Referring now to FIGS. **11A** and **11B**, there are shown perspective views of embodiments for mounting the casing **100**. FIG. **11A** shows a perspective view of the casing **100** mounted to a pendent arm. The pendant arm may have a first end configured to be mounted or affixed to a wall or other vertical surface and a second end configured to be mounted or affixed to the substantially cylindrical casing. FIG. **11B** shows a perspective view of the casing **100** mounted to a tube through the adapter **500**. The tube may further be suspended down from the ceiling.

While one or more example embodiments have been depicted, additional alternative embodiments (not depicted) are possible. For example, the top end portion **601** mounting to a tube through the adapter **500** may also, in alternative embodiments, mount to a pipe, metal rod, or any other cylindrical shaped tubing. Similarly, in alternative embodiments the casing **100** may be modified to hold a camera that differs from the camera **1000** of FIG. **10**. For example an alternative camera may integrate all circuitry into a single housing, as opposed to splitting it in the camera head **1001** and processing module **1002** as is done in the camera **1000**. When modified for a camera with all circuitry within a single housing, the cable **1003** connecting the camera head **1001** and the processing module **1002** may be eliminated. As another example of an alternative type of camera, a camera that is non-spherical in shape, including a camera that has a non-spherical camera head, may be used.

In other alternative embodiments, for springs **705**, other springs may be used; for example, a coil or torsional spring may be used in place of the described springs.

As mentioned above, while the depicted embodiment of the casing **100** is used to hold the spherical camera **1000** to the tube, in alternative embodiments (not depicted) the casing **100** may be used to hold a camera (including a non-spherical camera) to any suitable planar surface behind which is sufficient volume to accommodate the adapter **500** of the casing **100** and any associated wiring.

It is contemplated that any part of any aspect or embodiment discussed in this specification can be implemented or combined with any part of any other aspect or embodiment discussed in this specification.

9

While particular embodiments have been described in the foregoing, it is to be understood that other embodiments are possible and are intended to be included herein. It will be clear to any person skilled in the art that modifications of and adjustments to the foregoing embodiments, not shown, are possible.

What is claimed:

1. A housing for a camera, the housing comprising:
 - a substantially cylindrical casing having an axis, including:
 - a top end portion for removeably mounting to a tube without a tool;
 - a dome structure for housing at least a lens portion of a camera;
 - a bottom end portion for removeably mounting to the dome structure without a tool,
 - wherein, the bottom end portion further includes an interior side wall forming at least one hole configured to couple with a detachable sliding member for holding the camera and the detachable sliding member is further capable of sliding axially along the interior side wall of the bottom end portion to couple with the bottom end portion; and
 - a waterproofing seal positioned between the bottom end portion and the dome structure.
2. The housing of claim 1, wherein:
 - the substantially cylindrical casing may be mounted to a threaded tube, a threaded pipe, or a threaded metal rod.
3. The housing of claim 1, wherein:
 - the top end portion extends upward and is threaded;
 - the bottom end portion extends downward and is threaded; and
 - the dome structure is threaded.
4. The housing of claim 1, further comprising:
 - an adapter for removeably mounting to the top end portion, wherein the adapter is threaded; and
 - a waterproofing ring positioned between the top end portion and the adapter after the top end portion is mounted.
5. The housing of claim 1, wherein:
 - the dome structure further including:
 - a cylindrical dome housing;
 - a substantially clear dome;
 - a compressible seal positioned between the cylindrical dome housing and the substantially clear dome; and
 - a dome ring for affixing the substantially clear dome to the cylindrical dome housing without a tool, wherein, the substantially clear dome and the cylindrical dome housing are detachable.
6. The dome ring of claim 5, further including:
 - at least one spring,
 - wherein, the at least one spring maintains the affixation between the substantially clear dome and the cylindrical dome housing by having the capability to absorb external pressure against the substantially clear dome.
7. The detachable sliding member of claim 1 is further capable of:
 - attaching to a gimbal.
8. The gimbal of claim 7, further including:
 - a security camera head;
 - at least two arms positioned to frictionally retain the security camera head therebetween, wherein each of the arms has a linearly extending side positioned to contact the security camera head; and
 - a seat positioned to receive a surface of the security camera head.

10

9. The security camera head of claim 8, further including:
 - at least one of each of a lens and image sensor, a processing module having image processing circuitry and power circuitry, a cable connecting the camera head and processing module, and is spherical.

10. The seat in claim 8 is curved.

11. The gimbal of claim 7, further including:
 - a top surface from which the arms and the seat extend, and wherein the top surface comprises a slot for receiving a cable that connects the security camera head to image processing circuitry.

12. The gimbal of claim 7, further including:
 - a lip extending from the top surface on a side opposite from which the arms and the seat extend, the lip spaced from the periphery of the top surface to delineate a flange between the lip and the periphery of the top surface.

13. The detachable sliding member of claim 1, further including:

- at least one or more latches extending from an underside of the detachable sliding member, each of the latches having a lever arm at an end of which is a hook, and wherein the latches are hooked over to secure the gimbal to the detachable sliding member.

14. The housing of claim 1, further comprising:
 - an arm having a first end configured to be mounted to a vertical surface and a second end configured to be mounted to the substantially cylindrical casing.

15. A method for housing a camera, the method comprising:

- mounting a substantially cylindrical casing having an axis including a top end portion to a tube without a tool;
 - mounting a dome structure capable of housing at least a lens portion of a camera to a bottom end portion of the substantially cylindrical casing without a tool, wherein, the bottom end portion further includes an interior side wall forming at least one hole configured to couple with a detachable sliding member for holding the camera and the detachable sliding member is further capable of axially sliding along the interior side wall of the bottom end portion to couple with the bottom end portion; and
 - positioning a waterproof seal between the bottom end portion and the dome structure.

16. The method of claim 15, wherein:
 - the substantially cylindrical casing may be mounted to a threaded tube, a threaded pipe, or a threaded metal rod.

17. The method of claim 15, wherein:
 - the top end portion extends upward and is threaded;
 - the bottom end portion extends downward and is threaded; and
 - the dome structure is threaded.

18. The method of claim 15, further comprising:
 - an adapter for removeably mounting to the top end portion, wherein the adapter is threaded; and
 - a waterproofing ring positioned between the top end portion and the adapter after the top end portion is mounted.

19. The method of claim 15, wherein:
 - the dome structure further including:
 - a cylindrical dome housing;
 - a substantially clear dome;
 - a compressible seal positioned between the cylindrical dome housing and the substantially clear dome; and
 - a dome ring for affixing the substantially clear dome to the cylindrical dome housing without a tool, wherein, the substantially clear dome and the cylindrical dome housing are detachable.

11

20. The method of claim **19**, wherein:
the dome ring further including:

at least one retaining ring,

wherein, the at least one retaining ring maintains the
affixation between the substantially clear dome and 5
the cylindrical dome housing by having the capa-
bility to absorb external pressure against the sub-
stantially clear dome.

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12